

**RESPONSE TO OFFICE ACTION****Serial No. 09/917,842****Page 11 of 17****REMARKS**

This response is intended as a full and complete response to the Office Action mailed on September 7, 2005. In view of the following discussion, the Applicants believe that all claims are in allowable form.

**CLAIM REJECTIONS****35 U.S.C. §102 Claims 20-24, 26-34, 36, 38, 42-47 and 50**

Claims 20-24, 26-34, 36, 38, 42-47 and 50 stand rejected as being anticipated by United States Publication No. US 2002/0195056 published December 26, 2002 to *Sandhu, et al.* (hereinafter referred to as *Sandhu*). In response, the Applicants respectfully disagree.

Independent claims 20, 29, and 42 recite limitations not taught or suggested by *Sandhu*. *Sandhu* teaches an apparatus provided with multiple deposition regions in different reactor chambers. The reactor chambers are arranged in pairs. The adjacent reactor chamber pairs are chemically isolated from one another by a gas curtain. Furthermore, a loading mechanism, e.g., a robot, is positioned around the reactor chamber pairs and programmed to follow pre-defined transfer sequences for moving wafers into and out of the respective adjacent reactor chamber pairs to deposit monolayer film. In each of the disclosed embodiments and alternatives, *Sandhu* teaches deposition a monolayer film on a wafer in adjacent reactor chamber pairs and the movement of the wafer to be deposited between the adjacent reactor chamber pairs is performed by a robot. (*Sandhu*, Col 2, Paragraph 26, Line 2-10 and Col. 3, Paragraph 35, Line 3-17). In contrast, *Sandhu* does not teach or suggest a deposition chamber divided into two or more deposition regions that are integrally connected to one another having a wafer support disposed therein, wherein the wafer support is movable between two or more interconnected deposition regions, as recited in claims 20 and 29. In addition, *Sandhu* does not teach or suggest a deposition chamber body having a sealable port configured for horizontal entry and egress of a substrate having a wafer support disposed

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therein, wherein the wafer support is movable between two or more interconnected deposition regions, as recited in claim 42.

Thus, the Applicants submit that independent claims 20, 29, 42, and claims 21-24, 26-28, 30-34, 36, 38, 42-47, and 50 depending therefrom, are patentable over *Sandhu*. Accordingly, the Applicants respectfully requested that the rejection be withdrawn and the claims allowed.

**35 U.S.C. §103**

**A. Claims 1, 5-9 and 13-15**

Claims 1, 5-9, and 13-15 stand rejected as being unpatentable over United States Patent No. 6,455,098 issued September 24, 2002 to *Tran et al.*, (hereinafter referred to as *Tran*) in view of United States Patent No. 6,200,441 issued March 13, 2001 to *Gornicki et al.*, (hereinafter referred to as *Gornicki*). In response, the Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by the combination of *Tran* and *Gornicki*. *Tran* teaches an apparatus having two moveable tables disposed in two process chambers respectively. The two chambers are coupled through a transfer passage that is capable of being opened and closed to create a transfer cavity and isolating a small transfer volume. While transferring the wafer to be processed from the first chamber to the second chamber, the first movable table is elevated to the small transfer volume and then both the first and second movable tables are configured to close together and isolate the wafer within the small transfer volume. After the wafer being isolated in the small transfer volume, the second movable table is raised to expose the surface of the wafer placed therein to the second chamber for further deposition. (*Tran*, Col. 2, Line 16-19, 31-35 and 39-45). In short, *Tran* teaches using two movable tables disposed in two chambers respectively to open and close the ports of a small transfer volume by vertically elevating each movable table in each chamber. The first and second movable tables work in each process chamber individually. As such, the first movable table merely moves upwardly and downwardly solely in the first chamber and the second

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movable table solely moves in the second chamber in the same manner. Therefore, *Tran* does not teach a vacuum deposition chamber having a wafer support disposed therein that is vertically movable between the two or more interconnected deposition regions, as claimed by the Applicants.

*Gornicki* teaches using a stationary vacuum deposition machine to deposit a thin film layers. However, *Gornicki* fails to teach or suggest a modification of *Tran* to yield a vacuum deposition chamber having a wafer support disposed therein that is vertically movable between the two or more interconnected deposition regions, as cited in Claim 1. As such, it could not be obvious for one of the ordinary skill in the art to modify *Tran* as taught or suggested by *Gornicki* in a manner that yields a vacuum deposition chamber having a wafer support disposed therein that is vertically movable between the two or more interconnected deposition regions.

Thus, the Applicants submit that independent claims 1 and claims 5-9, and 13-15 depending therefrom, are patentable over *Tran* in view of *Gornicki*. Accordingly, the Applicants respectfully requested that the rejection be withdrawn and the claims allowed.

**B. Claims 10-11, 17-19, 25, 35, 39, 40-41 and 49b**

Claim 10-11, 17-19, 25, 35, 39-41, and 49 stand rejected as being unpatentable over *Sandhu* in view of *Tran*. In response, the Applicants have amended claim 17 to more clearly recite aspects of the invention. With respect to the remaining claims on rejection, the Applicants respectfully disagree.

As discussed above, *Sandhu* teaches deposition a monolayer film on a wafer in chemical isolated adjacent reactor chamber pairs and the movement of the wafer to be deposited between the adjacent reactor chamber pairs is performed by a robot. *Tran* teaches using two movable tables disposed in two chambers respectively to open and close the ports of a small transfer volume created by a transfer passage between a first and a second chamber. The design purpose in the *Tran* and *Sandhu* reference are respectively different. Therefore, they cannot be combined in a manner that yields the Applicants' invention. There

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is no teaching from *Tran* that would suggest a modification to *Sandhu* that would yield a deposition chamber having a first and second deposition regions integrally connected to one another and a wafer support disposed therein movable between the first and second deposition regions. Therefore, a *prima facie* case of obviousness has not been established because there is no suggestion or motivation to make the modification proposed by Examiner.

Thus, the Applicants submit that independent claims 10, 11, 17, 20, 29, and 42 and claims 18-19, 25, 35, 39-42, and 49 depending therefrom, are patentable over *Sandhu* in view of *Tran*. Accordingly, the Applicants respectfully requested that the rejection be withdrawn and the claims allowed.

**C. Claims 51-54**

Claim 51 stands rejected as being unpatentable over *Sandhu* in view of *Tran*, further in view of *Gomicki* and claims 52-54 stand rejected as being unpatentable over *Sandhu* in view of *Gomicki*. In response, the Applicants respectfully disagree.

Independent claims 17, 20, 29, 42 recite limitations not taught or suggested by *Sandhu*, *Tran*, *Gomicki* or the combination thereof. As the reasons and discussion set forth above, dependent claims 51-54 are patentable over cited references because the patentability of the independent claims 17, 20, 29, and 42 depended therefrom respectively. Accordingly, the Applicants respectfully requested that the rejection be withdrawn and the claims allowed.

**D. Claim 2**

Claim 2 stands rejected as being unpatentable over *Tran*, further in view of *Gomicki* and further in view of United States Patent No. 5,518,542 issued May 21, 1996 to *Matsukawa et al.*, (hereinafter referred to as *Matsukawa*). In response, the Applicants respectfully disagree.

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As discussed above, independent claim 1, from which claim 2 depends, recites limitations not taught or suggested by the combination of *Tran*, *Gornicki*, and *Matsukawa*. The teachings of *Tran* and *Gornicki* are discussed above. *Matsukawa* teaches a wafer cleaning apparatus having a wafer support that is vertically movable by a piston. Thus, utilizing a piston as taught by *Matsukawa* in two movable table in two respective chambers of *Tran* and a stationary vacuum deposition chamber of *Gornicki* still fail to teach or suggest a vacuum deposition chamber having a wafer support disposed therein that is vertically moveable in between two or more interconnected deposition regions, as recited by claim 1. As such, a *prima facie* case of obviousness has not been established because the combination of *Tran*, *Gornicki* and *Matsukawa* fail to teach or suggest the limitations recited in claim 1.

Thus, the Applicants submit that claim 2 is patentable over *Tran* and *Gornicki* in view of *Matsukawa*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**E. Claim 3**

Claim 3 stands rejected as being unpatentable over *Tran* in view of *Gornicki* and further in view of United States Patent No. 6,497,767, Issued December 24, 2002 to *Okase, et al.*, (hereinafter *Okase*). In response, the Applicants respectfully disagree.

Independent claim 1, from which claims 3 depends, recites limitations not taught or suggested by the combination of *Tran*, *Gornicki* and *Okase*. The teachings of *Tran* and *Gornicki* are discussed above. *Okase* teaches a thermal processing unit for a single substrate. However, *Okase* fails to teach or suggest a modification of *Tran* and *Gornicki* that yields a vacuum deposition chamber having a wafer support disposed therein that is vertically moveable between two or more interconnected deposition regions, as recited by claim 1. As such, a *prima facie* case of obviousness has not been established because the combination of *Tran*, *Gornicki* and *Okase* fails to teach or suggest the limitations recited in claim 1.

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Thus, the Applicants submit that claim 3 is patentable over *Tran* and *Gornicki* in view of *Okase*. Accordingly the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**F. Claim 4**

Claim 4 stands rejected as being unpatentable over *Tran*, in view of *Gornicki* and further in view of United States Patent No. 6, 387, 185, issued May 14, 2002 to *Doering, et al.* (hereinafter *Doering*). The Applicants respectfully disagree.

Independent claim 1, from which claim 4 depends, recites limitations not taught or suggested by the combination of *Tran*, *Gornicki* and *Doering*. The teachings of *Tran* and *Gornicki* have been discussed above. *Doering* teaches a processing chamber in which an electrostatic chuck may be used to support a semiconductor wafer during processing. *Doering* does not teach or suggest processing a substrate in separate regions of a deposition chamber. Thus, utilizing an electrostatic chuck as taught by *Doering* to modify the deposition system of *Tran* or *Gornicki* still fails to teach or suggest a vacuum deposition chamber having a wafer support disposed therein that is vertically moveable between two or more interconnected deposition regions, as recited by claim 1. As such, a *prima facie* case of obviousness has not been established because the combination of *Tran*, *Gornicki* and *Doering* fails to teach or suggest the limitations recited in claim 1.

Thus, the Applicants submit that claim 4 is patentable over *Tran* and *Gornicki* in view of *Doering*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**CONCLUSION**

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and swift passage to issue are earnestly solicited.

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If the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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Date

  
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